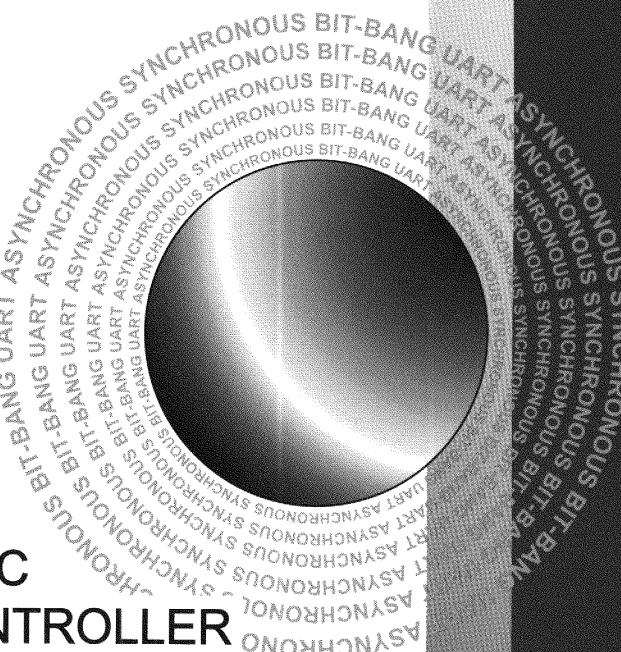
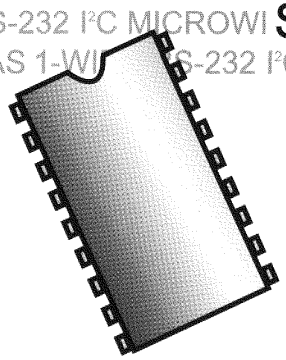
Serial PIC'n

VERSION 1.0

MICROWIRE SPI DALLAS 1-WIRE RS-232 I²C MICROWIRE



PIC MICROCONTROLLER SERIAL COMMUNICATIONS



FROM

SQUARE 1

Roger L. Stevens

Serial PIC'n

PIC MICROCONTROLLER SERIAL COMMUNICATIONS FROM SQUARE 1

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HALF.GRP	Half-Duplex Receive and Transmit Servces	40
ASYREC	Receive Service	
ASYXMT	Transmit Service	
VDLY	Bit Timing	
REDHALF.GRP	12 Bit PICmicro Half-Duplex Receive and Transmit Services	49
ASYRECX	Receive Service	
ASYXMTX	Transmit Service	
VDLYX	Bit Timing	
ASYRECT.TXT	Receive Service with Timeout	55
INTHALF.GRP	Interrupt Driven Half-Duplex Receive and Transmit Services	60
ASYRECI	Receive Service	
ASYXMT	Transmit Service	
VDLY	Bit Timing	
AUTORATE.GRP	Automatic Bit Rate Detection Services	75
AUTO	Bit Rate Detector	
VDLYAB	Bit Timing	
TASKFULL.GRP	Full-Duplex Communications Services	91
FREC.TSK	Receive Task	
FXMT.TSK	Transmit Task	
DLOOP	Time Filler	
DISSRV.GRP	Two Line by 20 Character LCD Display Service	106
INTFULL.GRP	Full-Duplex Interrupt-Driven Communications Services	124
INTSRV	Interupt Service (Implements All Communications)	
XMITSRV	Transmit Sub-Module	
RXTOBUF	Receive Sub-Module	
FILLIT	Receive Sub-Module	
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On-Chip UART Tools and Applications (Chapter 6)

Tool Modules	**Function**	
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UXMT.TXT	Transmit Service	
UREC.TXT	Receive Service	
INTSRV	Receive Interrupt Service	
UINIT.TXT	Configure UART	155
PACKET.GRP	Packet Communications Services	182
PACREC	Receive a Packet Byte	
PACXMT	Send a Complete Packet	
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UXMT.TXT	Transmit Service	
UREC.TXT	Receive Service	
LDBUF	Load Buffer Byte	
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PACXMT	Send a Complete Packet	
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Tool Modules	**Function**	
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IISTOP	Generate STOP	
IICLK	Generate CLOCK and Read SDA Line	
IIIN	Receive Eight Bit Byte	
IIOUT	Transmit Eight Bit Byte	
NACK	Test for ACK from Receiving Device	
SACK	Send ACK to a Slave Device	
IFCOMS.GRP	I^2C FET Driven Bit-Bang Master Services	218
IISTRTF	Generate START	
IISTOPF	Generate STOP	
IICLKF	Generate CLOCK and Read SDA Line	
IIINF	Receive Eight Bit Byte	
IIOUTF	Transmit Eight Bit Byte	
NACKF	Test for ACK from Receiving Device	
SACKF	Send ACK to a Slave Device	
IXCOMS.GRP	I^2C 12 Bit PIC Bit-Bang Master Services	223
IXSTRT	Generate START	
IXSTOP	Generate STOP	
IXIN	Receive Eight Bit Byte	
IXOUT	Transmit Eight Bit Byte	
XNACK	Test for ACK from Receiving Device	
XSACK	Send ACK to a Slave Device	
ISCOMS.GRP	I^2C 12 Bit PIC Family FET Driven Bit-Bang Master Services	228
ISSTRT	Generate START	
ISSTOP	Generate STOP	
ISIN	Receive Eight Bit Byte	
ISOUT	Transmit Eight Bit Byte	
SNACK	Test for ACK from Receiving Device	
SSACK	Send ACK to a Slave Device	
IISLAVE.GRP	I^2C Bit-Bang Slave Services	239
IIWAIT	Wait for Bus Activity and determine Type of Activity	
SLREC	Receive Eight Bit Byte from Master	
ACK	Send ACK to Master	
SLVOUT	Transmit Eight Bit Byte to Master	
NOACK	Do Nothing for One Clock Period	
SLVLP	Slave Control Loop	
HOLD	Hold Clock Line Low (Temporarily Stop Communications)	
BACK	Combine ACK and NOACK in One Module	

IIPROM.GRP	I²C Serial EEPROM Master Communications Services	258
EEPRE	Send Slave Address and Memory Address to EEPROM	
EEWRIT	Write a Byte to EEPROM	
EEPOLL	Poll EEPROM for Completed Write Cycle	
EEREAD	Read Byte from EEPROM	
EECUR	Read Byte from EEPROM Current Address	
EESQWR	Multi-Byte write to EEPROM	
EESQRD	Multi-Byte Read from EEPROM	
EESEQ	Multi-Byte Write To and Read From EEPROM	
IXPROM.GRP	I²C Serial EEPROM Master Services for 12 Bit PIC Family	264
EXCUR	Read Byte from EEPROM Current Address	
EXSEQ	Multi-Byte Write To or READ From EEPROM	
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Applications	**Function**	
ORANGE1.ASM	Demonstrates I²C EEPROM Services	268
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IIATOD.TXT	I²C Master Communications with MAX187 A/D	
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IIATOD.TXT	I²C Master Communications with MAX187 A/D	
IICOMS.GRP	I²C Bit-Bang Master Services	
IIPROM.GRP	I²C Serial EEPROM Master Communications Services	
KEEP.TXT	Store A/D data in Allocated Block of EEPROM	
ASVERT.TXT	Convert 12 Bit A/D Result to 4 Digit ASCII	
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ASYXMT.TXT	Asynchronous Transmit Character	
FAWN1.ASM	I²C Slave Application: Case Changer	302
IISLAVE.GRP	I²C Bit-Bang Slave Services	
ORANGE4.ASM	Master Program to Communicate with Slave FAWN1	305
IICOMS.GRP	I²C Bit-Bang Master Services	
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IISLAVE.GRP	I²C Bit-Bang Slave Services	
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ORANGE5.ASM	Master program to Communicate with Slave Display FAWN2	313

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Tool Modules	Function	
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SPIMB	SPI Master Mode B Byte Transfer	
SPIMC	SPI Master Mode C Byte Transfer	
SPIMD	SPI Master Mode D Byte Transfer	
SPIFA.TXT	SPI Master Mode A Stretched Clock Byte Transfer	331
SPISLAVE.GRP	SPI Bit-Bang Slave Services	337
SPISMA	SPI Slave Mode A Byte Transfer	
SPISMD	SPI Slave Mode D Byte Transfer	
DESELCT	Place Slave in De-Selected Configuration	
SPIATOD.TXT	SPI Master Communications with MAX187 A/D	343
DISP89.TXT	SPI Master Communications with MC14489 Display Driver	346
EE25C.GRP	SPI Master to Serial EEPROM Communications Services	359
WRITESR	Write to EEPROM Status Register	
READSR	Read EEPROM Status Register	
CLOSE	Disable All EEPROM Write Operations	
POLL	Poll EEPROM for Completed Write Cycle	
PREWRT	Send Preamble for EEPROM Data Write	
ONEOUT	Write One Byte to EEPROM	
MLTOUT	Multiple Byte (Page) Write to EEPROM	
PRERD	Send Preamble for EEPROM Data Read	
ONEIN	Read One Byte from EEPROM	
MLTIN	Multiple Byte Read from EEPROM	
SPI93C46.GRP	SPI Master to Microwire EEPROM Communications Services	385
EEOPEN	Enable EEPROM for Write	
EECLOSE	Disable EEPROM Write Capability	
EEPOLL	Poll EEPROM for Completed Write Cycle	
EERASE	Erase all of EEPROM	
EEWRITE	Write 16 Bit Data to EEPROM Register	
EEREAD	Read 16 bit Data from EEPROM Register	
SPIDONE.TXT	Hardware (SSP) SPI Poll for Completed Transaction	406
SSP25C.GRP	Hardware (SSP) SPI to Serial EEPROM Communications Services	406
WRITESR	Write to EEPROM Status Register	
READSR	Read EEPROM Status Register	
CLOSE	Disable All EEPROM Write Operations	
POLL	Poll EEPROM for Completed Write Cycle	
PREWRT	Send Preamble for EEPROM Data Write	
ONEOUT	Write One Byte to EEPROM	
MLTOUT	Multiple Byte (Page) Write to EEPROM	
PRERD	Send Preamble for EEPROM Data Read	
ONEIN	Read One Byte from EEPROM	

MLTIN	Multiple Byte Read from EEPROM	
FIXER	Required for Writes	
MODEA	Ensure Correct Mode	
SSPATOD.TXT	Hardware (SSP) SPI Master Communications with MAX187 A/D	417

Applications **Function**

YELLOW1.ASM	SPI A/D Converter to Five Digit LED Display	347
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YELLOW2.ASM	SPI Data Logger and Display to Slave Display CANARY2	367
SPIATOD.TXT	SPI Communications with MAX187 A/D	
EE25C.GRP	SPI Serial EEPROM Communications Services	
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SPISLAVE.GRP	SPI Bit-Bang Slave Services	
WHITE1.ASM	Hardware (SSP) SPI A/D Converter to LED Display	414
SSPATOD.TXT	Hardware (SSP) SPI Communications With MAX187 A/D	
SPIDONE.TXT	Hardware (SSP) SPI Poll for Completed Transaction	
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PRINT89.TXT	Hardware (SSP) SPI to MC14489 Display Driver	
IVORY1.ASM	Hardware (SSP) SPI Interrupt Driven Slave Case Changer	423

Microwire Tools and Applications (Chapter 10)

Tool Modules **Function**

WIRECOMS.GRP	Microwire Bit-Bang Master Services	436
STBT	Send a Start or Dummy Bit	
MWIRE	Send and Receive an Eight Bit Byte	
WIRESLOW.GRP	Microwire Stretched Clock Bit-Bang Master Services	437
STBT	Send a Start or Dummy Byte	
MWIRE	Send and Receive an Eight Bit Byte	
FILLER	Time Filler to Stretch Clock	

WIRESLAV.GRP	Microwire Bit-Bang Slave Services	442
SLSTBT	Wait to be Selected and Wait for Start Bit	
SLDMBT	Send Dummy Bit	
SLVXFR	Receive and Send an Eight Bit Byte	
MW93C46.GRP	Microwire EEPROM Communications Services	450
EEOPEN	Enable EEPROM for Write	
EECLOSE	Disable EEPROM Write Capability	
EEPOLL	Poll EEPROM for Completed Write Cycle	
EERASE	Erase all of EEPROM	
EEWRITE	Write 16 Bit Data to EEPROM Register	
EEREAD	Read 16 bit Data from EEPROM Register	
MW187AD.TXT	Microwire Communications with the MAX187 A/D	454
MW0832AD.TXT	Microwire Communications with the AD0832 A/D	457

Applications **Function**

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MW0832AD.TXT	Microwire Communications with the AD0832 A/D	
MW93C46.GRP	Microwire EEPROM Communications Services	
HEXASC.TXT	Convert One Byte Hex to Two Byte ASCII	
MWSPLAY.TXT	Format Display Data	
MWDISP.TXT	Send Character to CANARY2 Slave Display	
JADE1.ASM	Microwire Slave Parallel Port	468
WIRESLAV.GRP	Microwire Bit-Bang Slave Services	

Dallas 1-Wire Tools and Applications (Chapter 11)

Tool Modules **Function**

DAL1WIRE.GRP	1-Wire Bit-Bang Master Services	483
DAL1WR	Write Time-Slot	
DAL1RD	Read Time-Slot	
DAL1RES	Send RESET and Receive Presence	
DALREC	Receive 8 Bit Byte	
DALSND	Send 8 Bit Byte	
SLV1WIRE.GRP	1-Wire Bit-Bang Slave Services	490
DS1WAIT	Wait for RESET Pulse	
DS1PRES	Send Presence Pulse	
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DS1WR	Write a Bit	
DS1REC	Receive 8 Bit Byte	
DS1SEN	Send 8 Bit Byte	
DAS1820.GRP	1-Wire DS1820 Thermometer Communications Services	503
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Applications	Function	
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DAS1820.GRP	1-Wire DS1820 Thermometer Communications Services	
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DISTMP.TXT	Format Temperature for Display	
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SLV1WIRE.GRP	1-Wire Bit-Bang Slave Services	
PURPLE2.ASM	Master Program to Communicate with Slave MAUVE1	515
GETMAUVE.TXT	Get Port Data from MAUVE1	
DAL1WIRE.GRP	1-Wire Bit-Bang Master Services	
ASYXMT.TXT	Asynchronous Transmit Character	

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